

Reply to: 3460

January 12, 1989

Subject: American beech mortality within the McCray Ridge Opportunity Area

To: District Ranger, Greenbrier Ranger District

Marvin Schuhmann (Assistant Ranger) requested me to provide information on the current impact of beech bark disease on the American beech resource within the McCray Ridge Opportunity Area (OA). We used aerial photography to rate the amount of hardwood mortality in stands with a component of American beech.

Methods: A database was constructed at the Morgantown Field Office which listed all stands within Greenbrier Ranger District with an American beech component. The McCray Ridge OA has American beech located in compartments 37, 38, 39, and 52. The amount of mortality was rated from aerial photography for only those stands which had at least ten square feet per acre of American beech.

High altitude panoramic aerial (1:30,000 scale) color infrared photography was acquired on June 11, 1988. The procedure for aerial photograph interpretation followed Mielke et al. (1984) and Acciavatti and Dropp (1986). Each stand was rated (see Table 1) according to the methods developed by Acciavatti and Dropp (1986).

No ground data was taken to determine the accuracy of the aerial photography interpretation, but good results were achieved within the Gaudineer OA. The Gaudineer OA and the McCray Ridge OA were examined at about the same time by one aerial photograph interpreter. Therefore, the results for the McCray Ridge OA should be as accurate as the Gaudineer OA.

Results and Discussion: Our VIMIS data listed American beech was present within 151 stands (4545 acres) of the McCray Ridge OA. Only 95 stands (2850 acres) had at least ten square feet of American beech per acre. Table 2 lists the mortality rating for each of the 95 stands. Only one stand had no mortality. Figures 1A - 1D show the distribution of stands classified with light, moderate and severe mortality. The McCray Ridge OA should be classified in the killing front because beech bark disease is known to occur within eight miles of the OA, and severe mortality has begun in some stands (see Figures 1A - 1D, and Table 2) (Houston and O'Brien, 1983). Mortality of the American beech will continue over the next ten years.

Recommendations: Beech bark disease mortality will continue to increase within the McCray Ridge OA. The economic impact on the timber resource by the disease will probably not be significant. Beech bark disease may have an

Table 1. Decision criteria for beech bark disease damage classes^{*/}.

BEECH BARK DISEASE
DAMAGE INTENSITY CLASS

Light
Moderate
Severe

DESCRIPTION

< 10% OF TREES DEAD AND DYING
10 - 25% OF TREES DEAD AND DYING
> 25% OF TREES DEAD AND DYING

BEECH BARK DISEASE
DAMAGE FREQUENCY CLASS

Clustered
Partial
Widespread

DESCRIPTION

< 30% OF STAND AREA
30 - 60% OF STAND AREA
> 60% OF STAND AREA

The damage class for each stand was labeled in Table 2 using the following coding matrix:

CODING MATRIX FOR BEECH BARK DISEASE DAMAGE CLASSES

INTENSITY
CLASS

CLUSTERED

PARTIAL

WIDESPREAD

Light
Moderate
Severe

LC
MC
SC

LP
MP
SP

LW
MW
SW

^{*/} Taken from Acciavatti and Dropp (1986). The beech bark disease damage frequency class "Clustered" was originally referred to as "Scattered".

Table 2. Damage classes ^{*/} for stands ^{**/} with ten square feet per acre of American beech in compartments 37, 38, 39, and 52, McCray Ridge Opportunity Area, Greenbrier Ranger District, Monongahela National Forest, 1988.

Damage Compartment	Stand	Acres	Total Stand Basal Area (sq. ft. / ac.)	Total American Beech Basal Area (sq. ft. / ac.)	Class
37	1	20	150	24	LP
	2	32	130	24	MW
	4	13	150	28	LP
	5	32	150	20	MW
	6	13	180	18	LW
	10	23	170	12	MW
	11	18	120	36	MW
	13	11	150	28	LW
	14	17	130	59	MP
	15	6	140	20	LC
	17	29	120	10	LP
	18	56	140	12	MW
	19	40	180	10	MW
	20	18	110	12	MW
	23	8	160	15	LP
	25	14	220	29	LP
	28	13	160	12	MW
	30	42	150	25	MW
	32	34	130	20	LP
	33	35	140	38	MW
	34	18	110	16	LP
	35	22	150	92	LP
38	4	11	150	16	LC
	6	112	180	27	LW
	7	11	150	64	LP
	13	21	160	10	LP
	14	15	150	38	LP
	16	24	126	14	LP
	17	17	160	10	LP
	20	16	140	20	LC
	22	16	140	12	MW
	30	20	160	14	LW
	31	17	150	10	MP
	33	100	150	22	LW
	35	34	130	15	LW
	47	19	160	36	LP
	49	41	140	12	LP
	50	45	150	25	LP
	51	13	110	22	LW
	52	45	200	22	MP
	54	43	170	20	LW

^{*/} See Table 1 for damage class codes.

^{**/} Stand acres and basal area estimates taken from VIMIS.

Table 2. Continued */ **/

Damage Compartment	Stand	Acres	Total Stand Basal Area (sq. ft. / ac.)	Total American Beech Basal Area (sq. ft. / ac.)	Class
39	1	36	130	16	LP
	2	43	110	20	SW
	3	27	170	24	LC
	4	24	130	14	LP
	5	111	150	29	LP
	6	12	140	21	MP
	8	21	150	12	MW
	11	26	130	15	LP
	12	8	170	43	MP
	13	13	190	15	LP
	19	4	120	30	LC
	23	20	140	19	MP
	26	19	120	15	MW
	27	13	140	38	MW
	28	33	120	40	LP
	30	50	130	19	LP
	31	48	160	45	MP
	33	20	180	16	SW
	34	22	190	16	LP
	35	8	220	15	LP
	36	10	150	39	LP
	37	49	150	21	SW
	39	13	130	35	MW
	40	33	160	64	MW
	41	21	120	10	MP
	42	20	170	12	MP
	44	84	160	44	MP
	45	15	180	42	LP
	51	11	120	15	LP
	52	96	140	19	MP
	53	11	120	29	LP
	54	17	100	47	SP
52	19	36	150	40	LP
	20	23	150	28	LC
	22	85	160	18	LC
	26	31	130	22	LC
	29	36	130	10	LC
	33	23	120	58	LP
	34	19	170	40	LC
	35	30	150	50	LP
	36	28	150	36	LW
	37	93	140	32	MP
	38	46	160	20	LP
	39	20	130	15	LC

*/ See Table 1 for damage class codes.

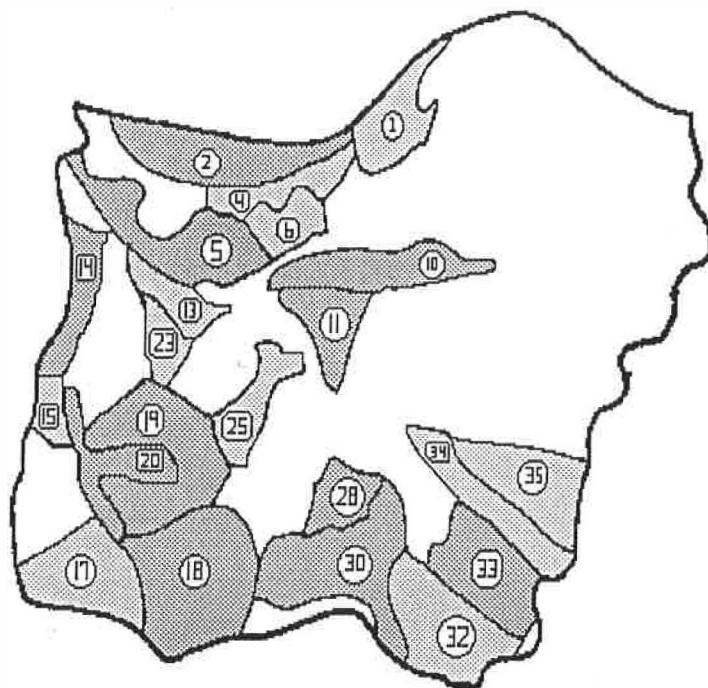
**/ Stand acres and basal area estimates taken from VIMIS.

Table 2. Continued */ **/

<u>Damage Compartment</u>	<u>Stand</u>	<u>Acres</u>	<u>Total Stand Basal Area (sq. ft. / ac.)</u>	<u>Total American Beech Basal Area (sq. ft. / ac.)</u>	<u>Class</u>
52	41	11	140	41	MP
	42	91	180	26	LC
	43	10	140	35	none
	44	9	120	48	MP
	45	29	150	16	MP
	46	14	210	45	LP
	47	26	150	20	LP
	48	35	150	30	LP
	50	64	180	13	LP
	56	19	180	18	LP

*/ See Table 1 for damage class codes.

**/ Stand acres and basal area estimates taken from VIMIS.



Beech bark disease
Mortality Classes

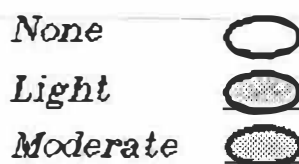
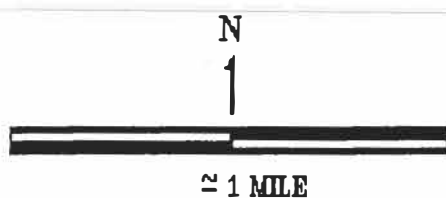
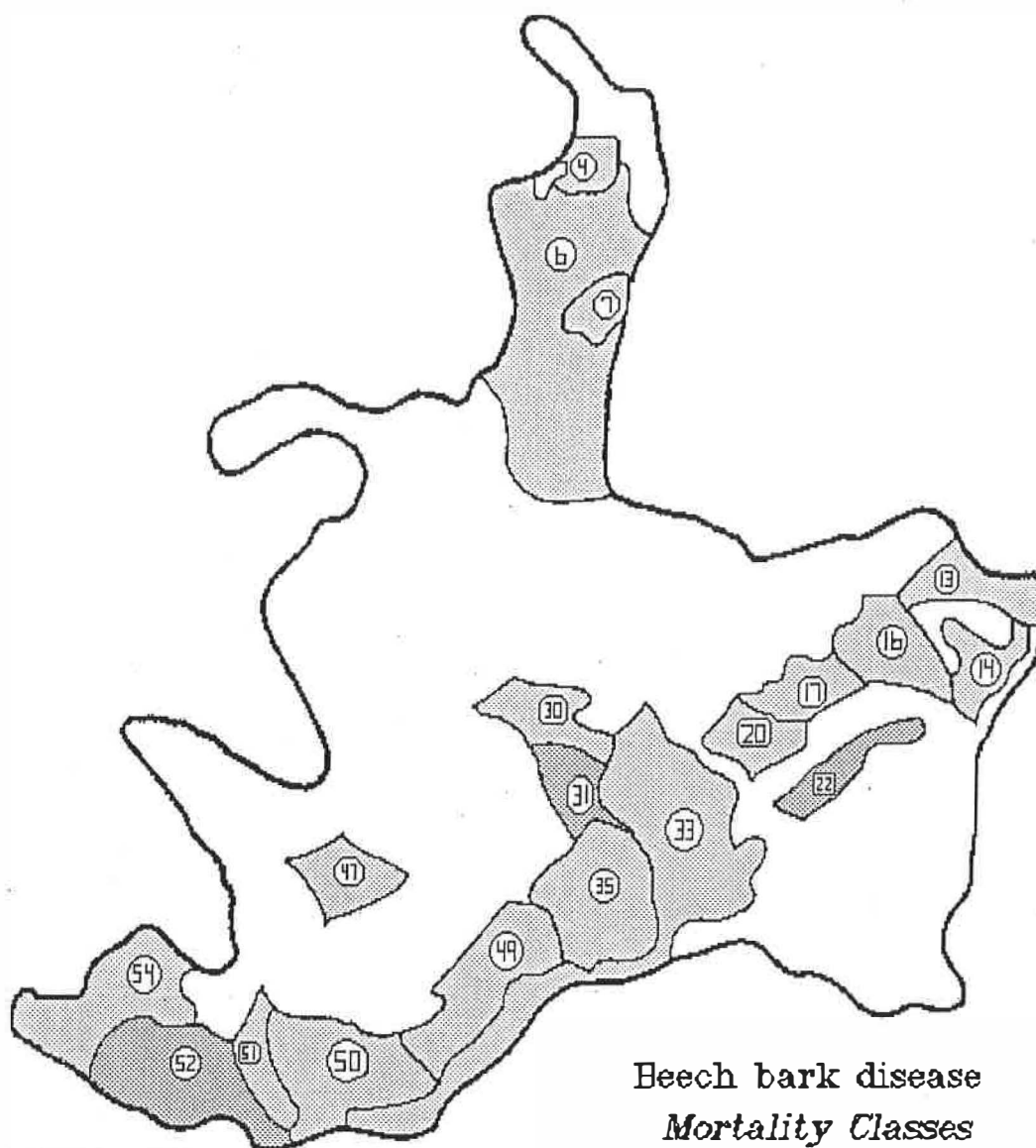


Figure 1A. Stands with hardwood mortality in Compartment 37, Greenbrier Ranger District, 1988.

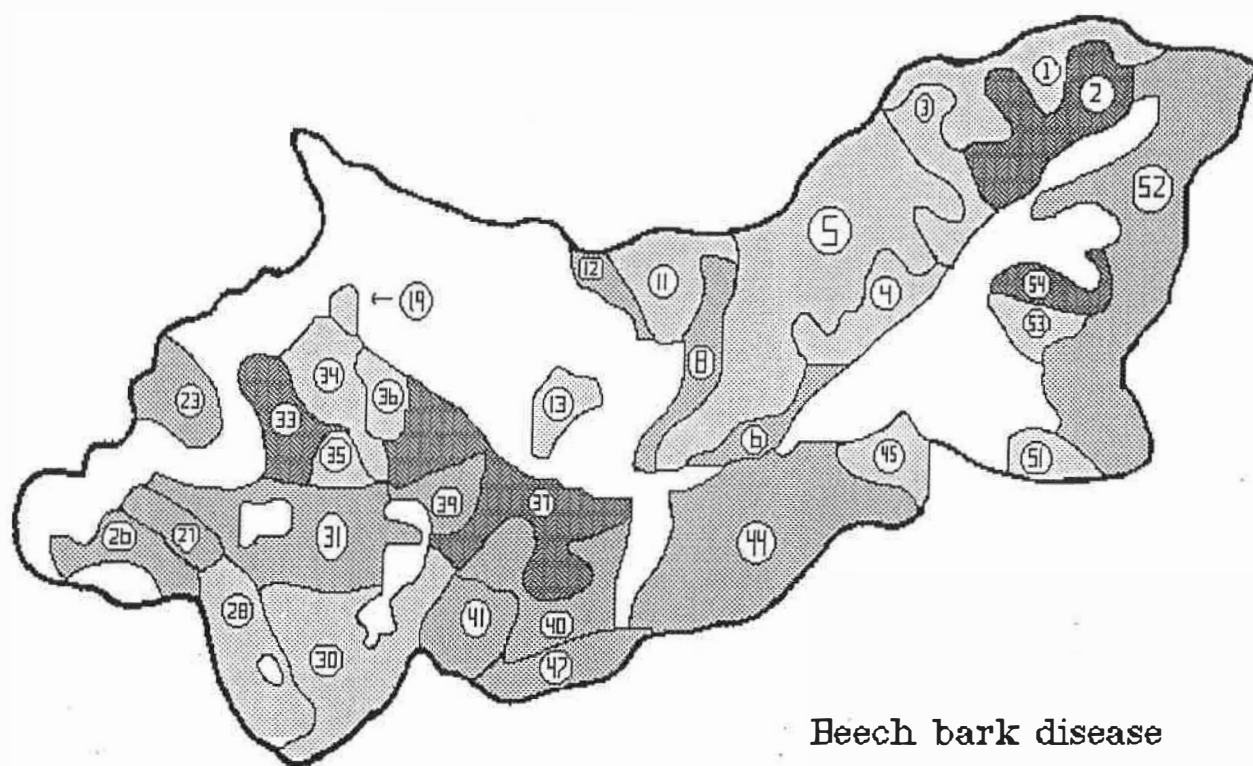


Beech bark disease
Mortality Classes



None 
 Light 
 Moderate 

Figure 18. Stands with hardwood mortality in Compartment 38, Greenbrier Ranger District, 1988.



Beech bark disease
Mortality Classes

<i>None</i>	
<i>Light</i>	
<i>Moderate</i>	
<i>Severe</i>	

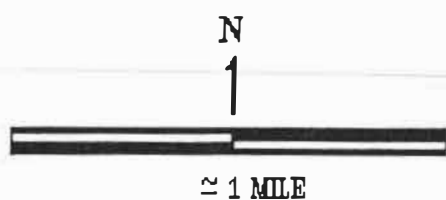
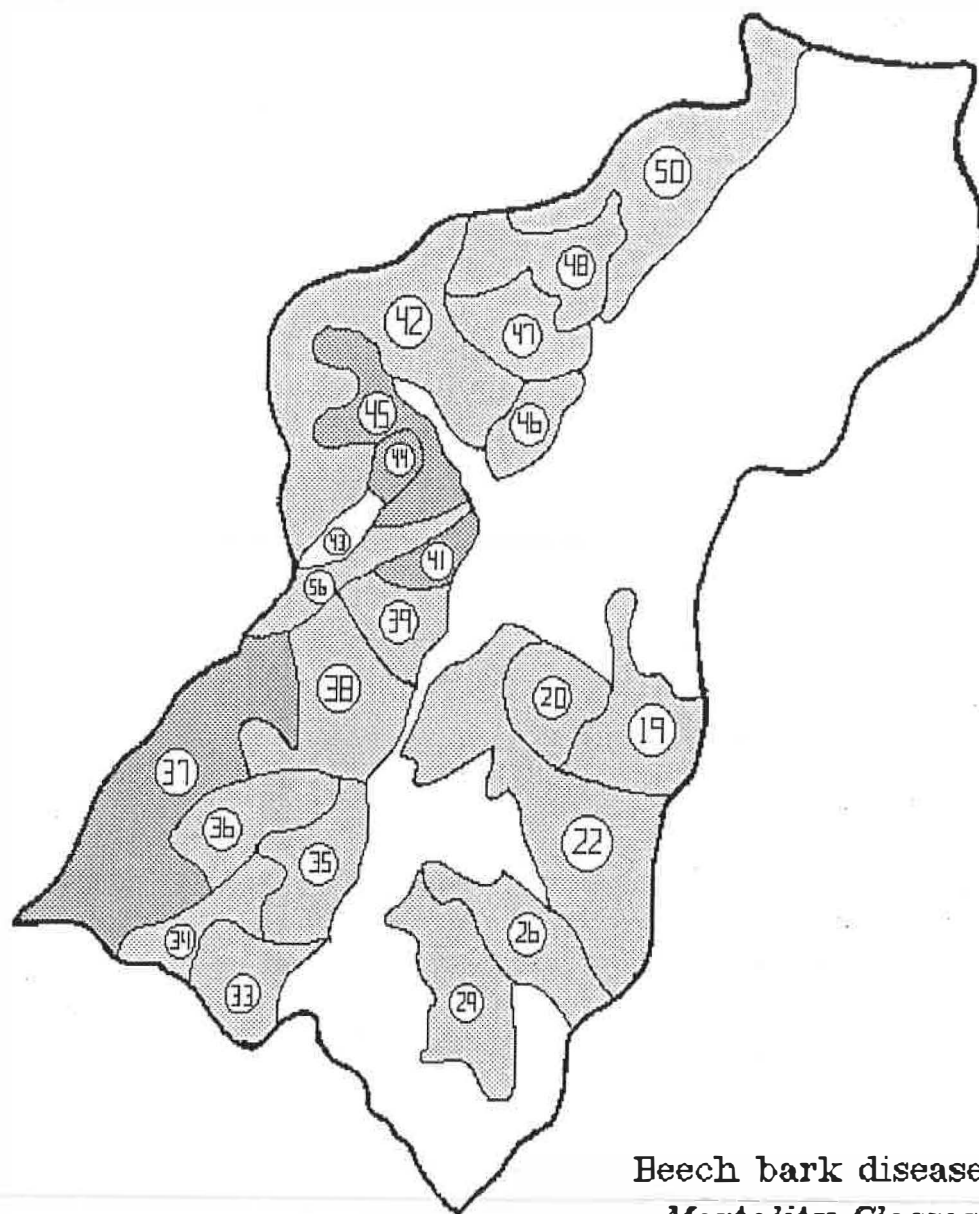
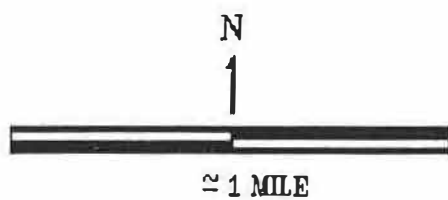


Figure 1C. Stands with hardwood mortality in Compartment 39, Greenbrier Ranger District, 1988.



**Beech bark disease
Mortality Classes**



<i>None</i>	
<i>Light</i>	
<i>Moderate</i>	

Figure 1D. Stands with hardwood mortality in Compartment 52, Greenbrier Ranger District, 1988.